REMARKS

Claims 1 to 34 are pending. No claims have been canceled. No claims have been withdrawn from consideration. Claims 5, 6 and 13 to 33 are amended, to correct errors in the dependency. Claim 34 has been added. Basis for new claim 34 may be found at page 22, lines 7 to 13.

Applicant's Agent thanks Examiners Vo and Desai for the opportunity to discuss the outstanding Office Action in an interview on April 18, 2006. Applicants Agent explained the differences between the instant claimed article and U.S. 6,468,451 (Perez et al.). Briefly, Applicant's Agent explained that Perez et al. teach a fibrillated article prepared from an oriented, high melt strength polypropylene foam substrate, the reference provides no teaching regarding the precursor foam, except as a material for subsequent fibrillation. As result of the reference fibrillation process, the initial foam morphology was lost, and a fibrous or schistose morphology resulted. The instantly claimed article retains the cellular foam morphology. The differences were further illustrated with reference to electron micrographs of the foam substrate and samples of both articles. No agreement was reached regarding Perez et al., although the Examiners kindly agreed to give Applicant's arguments further consideration presented during the interview.

Applicant's Agent briefly addressed the rejection based on U.S. 4,733,786 (Emslander et al.) in view of U.S. 6,251,319 (Tusim et al.). A sample of Emslander et al. was provided and discussed. Briefly, Applicant's Agent argued that there was no motivation to substitute the foam of Tusim et al. for the insulating layer of Emslander et al. Although the Examiner agreed to withdraw the rejection, arguments are provided herewith.

112 Rejections

Claims 25 and 27 stand rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Office Action notes there is insufficient antecedent basis for the limitation of "polymer".

Claims 25 and 27 have been amended to correct this deficiency. Applicants submit that the rejection has been overcome, and that the rejection should be withdrawn.

§ 102 Rejections

Claims 1-10, 20, 21, 25-30 and 33 stand rejected under 35 USC § 102(a) as being anticipated by U.S. 6,468,451 (Perez et al.). The Office Action asserts that Perez et al. teach high melt strength polypropylene foam articles and that such articles are suitable as receptive surfaces for printing. The rejection is traversed.

Perez et al. describes a fibrillated foam article prepared by fibrillating a high melt strength polypropylene foam substrate. If prepared from a uniaxially oriented foam substrate, the fibrillated article may comprise polymeric microfibers having cross-sections between 0.5 and 10 micrometers, as shown in Fig 1. Alternatively, if prepared from a biaxially oriented foam substrate, the fibrillated article may comprise a schistose (flake) structure.

The Office Action errs when asserting that Perez et al. disclose a high melt strength oriented polypropylene foam layer suitable for use as a receptive surface for printing (with reference to column 14, lines 24-25). It is the fibrillated article, such as depicted in Figure 1, that is purportedly useful as a printing substrate, not the precursor foam substrate. The reference suggests no utility for the precursor foam substrate, except for subsequent fibrillation. As the foam precursor is fibrillated, the foam morphology is lost. The Examiner is invited to review Perez et al. from column 10, line 54 to column 11, line 16 for a brief description of the reference fibrillation process, and to review Figures 3 to 6 to see the resultant fibrillated surface of Perez et al. no longer bears a foam morphology.

Claim 2 and 3 each refer to "visual security elements". Applicants have described the term on page 5, line 31 to page 6, line 13 as "those that change appearance in a reversible, predictable and reproducible manner by the application of heat or pressure, by variation in the angle of viewing, or by the adjustment of lighting conditions". Perez et al. provide no teaching or suggestion of any such visual security elements. At best, the reference describes conventional inks that may be applied to the fibrillated article of the reference.

Claim 4 refers to "embossments", which Applicants have described as three-dimensional elements that can be detected by feel. Perez et al., at column 12, lines 19-34 teach that during the fibrillation process, the precursor foam layer may be supported by a screen so that masked portions remain unfibrillated, and portions corresponding to openings in the screen are fibrillated, resulting an article cloth-like in appearance. Such a description does not teach or suggest a

"tactile security element". As the article has been fibrillated, the resulting cloth-like elements would be opaque and have a fibrous texture. The instant embossments reduce the light scattering of the initial foam, resulting in translucent or transparent regions, as taught on page 7, lines 7 to page 8, line 19, and further limited in claim 5. Briefly, the foam substrate is initially opaque, but the embossments reduce the light scattering to produce a substantially transparent region. This is illustrates in Figures 1 and 2, which show the security element of Example 3 under reflected and transmitted light respectively. Such security elements cannot be duplicated using a color copier.

In contrast to the instant embossments, the article of Perez et al has cloth-like features, as result of the fibrous morphology. The pattern imparted by Perez et al, does not have any substantially transparent regions; the unfibrillated portions retain the original foam morphology, while the fibrillated regions are provided with a fibrous or schistose texture. One skilled in the art would not conflate the fibrous morphology of Perez et al for the embossments of the instant invention.

Rejected claims 6-10, 21, 25-30 and 33 each refer to a multilayer article comprising the foam security substrate of claim 1, and at least one thermoplastic film layer. As previously argued, Perez et al. describe a fibrillated article having a fibrous or schistose morphology. The foam precursor of the reference is used only for subsequent fibrillation.

At column 16, lines 11 to 13, Perez et al teach that the fibrillated article may be provided with a release coating; i.e. a coating for providing adhesive release from an adhesive tape roll during unwind. The construction is described at reference column 15, lines 48 to 50 as adhesive layer/backing layer/release layer, where the backing is the fibrillated article. In making the rejection, the Office Action conflates the reference fibrillated layer with the instant foam layer without acknowledging the fundamentally different morphology.

Claim 7 recites that the security element of claim 1 is integral to the thermoplastic film layer. The teachings of Perez et al. merely state that pigments may be added to the release coating. As the described article has the construction of adhesive layer/fibrillated backing layer/pigmented release layer, it is not apparent how this serves as a security element for authenticate documents or to prevent counterfeiting. Pigmented release coatings do not contemplate security elements.

Claim 10 recites that the security element, integral to the thermoplastic film layer, is revealed through a substantially transparent region in the foam layer. Perez et al provide no teaching or suggestion of providing a transparent region in the reference article. The Office Action errs when asserting the reference article will "inherently" reveal printed indicia "through the foams". Applicants again object to the conflation of the fibrillated article of Perez et al. with the foam of the present invention. The fibrillated article of Perez et al is opaque as the result of fibrillation, and there is no teaching or suggestion that the fibrillated article may be rendered transparent.

In invoking inherency, the Office Action fails to meet the standard required under the rules of M.P.E.P. 2112. "In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990).

As there is no teaching or suggestion that the fibrillated article is, or may be rendered, transparent, the Examiner is required to provide a reasoned explanation, preferably supported by a reference, to support this assertion. In the absence of any support, the rejection should be withdrawn.

The rejection of claims 1-10, 20, 21, 25-30 and 33 under 35 USC § 102(a) as being anticipated by U.S. 6,468,451 (Perez et al.) has been overcome and should be withdrawn.

§ 103 Rejections

Claims 1-3, 6-11, 13, 15-18, 20-25 and 27-33 stands rejected under 35 USC § 103(a) as being unpatentable over U.S. 4,733,786 (Emslander et al.) in view of U.S. 6,251,319 (Tusim et al.). The rejection is traversed.

Emslander et al. is directed to a tamper-evident innerseal for containers comprising (as shown in Figure 1) an insulating layer 24, a facing layer 22 bonded to a surface of the insulating layer, and a thermally sensitive layer 26, bonded to the other surface of the insulating layer. At column 4, lines 29 to 49, Emslander et al. teach the insulating layer may be a film, a foam, paper and cork. Polymeric material, including polyethylene and polypropylene are preferred.

The Office Action acknowledges that Emslander et al. does not teach or suggest high melt strength polypropylene foams, but attempts to correct the defect with reference to Tusim et al. Tusim et al. describes a process for making a high melt strength polypropylene sheet, which are said to be useful for motor vehicle applications, such as cushioning, and thermal and sound insulation.

The Office Action asserts it would be obvious to substitute the polypropylene foam sheet of Tusim et al. in the innerseal of Emslander et al. motivated by the desire to provide "better thermal insulating capacity to the insulating layer". Applicants disagree, and assert the Office Action fails to make a *prima facia* case for obviousness as required by M.P.E.P. 2143.01. Specifically, the mere fact that references *may* be combined or modified does not render the resulting combination obvious unless the prior art suggests the desirability of the combination.

There is no teaching or suggestion that it would be desirable to replace of the insulating layer of Emslander et al. by the foamed sheet of Tusim et al. The function of the Emslander et al. insulating layer is 'to prevent the thermally sensitive layer (26) from becoming activated during the heating sealing process" and 'to insulate the facing layer (22) from heat applied during tampering". The is no teaching or suggestion that the foams of Tusim et al. would function better than the foams, films, paper and cork recited by Emslander et al. Tusim et al. provide no teaching that the reference foams are more effective at insulation. At Tusim et al. column 2, lines 8-11, the reference states that the foams "exhibit good sound and thermal absorption". "Good" does not suggest superior. The Office appears to be suggesting an "obvious to try" standard, which is not permissible under M.P.E.P. 2145.

The Office Action provides no evidence that the high melt strength foams of Tusim et al. would have better insulating properties than the materials of Emslander et al. Thermal conductivity is a complex phenomenon that is a function of the sum of the termal conductivities of the solid phase, the gas phase (i.e. the blowing agent), plus convective and radiative components. Provided herewith is Handbook of Polymeric Foams and Foam Technology, D. Klempner and V Sendijarevic, Eds., Hanser Publishers, Hanser Gardener Publications, Inc., Cincinnati, pp 40-47, which describes the conductivity of polymer foams and the effect of each of the components on the thermal conductivity. As the reference clearly teaches the complex

nature of the thermal conductivity, one cannot predict a priori whether the foams of Tusim et al. would have better insulating properties, as asserted in the Office Action.

Further, in suggesting the substitution, the Examiner ignores other relevant teaching of both references. Emslander et al. teach that the insulating layer is preferably 10 to 15 mils in thickness (~.25 to .38 millimeters, see column 4, lines 47 to 49). Values outside of this range are not suggested. Tusim et al. state that the reference foam sheet preferably has a thickness of at least 5 millimeters, and no greater than 25 millimeters (column 2, lines 47 to 55).

Thus Tusim et al suggests a foam having thicknesses 13 to 100 times that suggested by Emslander et al. As Tusim et al is directed to automotive applications, such as cushioning, it would be apparent to one skilled in the art that greater thickness are required than for the innerseal application of Emslander et al, where thicknesses must be minimized. Therefore to substitute the relative thick foam sheets of Tusim et al for the conventional insulating materials of Emslander et al defeat the purposes of both inventions.

Further, there is no teaching as to how to modify the process of Tusim et al to enable thinner profiles, nor the desirability for doing so. In contrast to Tusim et al., Applicants have described a process for preparing high melt strength polypropylene foams having thinner profiles and smaller cell size than those of Tusim et al. See page 21, line 25 to page 26, line 25. Tusim et al teach, at column 2, lines 29 to 34 that the cell sizes are preferably at least 0.1 millimeter (100 micrometers). Smaller cells sizes are neither suggested or enabled by the reference process. To the contrary, the reference teaches larger cell sizes are desirable when it states "a foam can usually be made more rigid by increasing density or cell size.

In discussions with Applicant's Agent, Jeffrey O. Emslander, the inventor of U.S. 4,733,786 concurs with these arguments and further asserts that the foam of Tusim et al. is too rigid for the reference innerseal application. Further, if oriented as required by the instant claims, the polypropylene foam would resist tearing by consumers attempting to open the container.

In an effort to advance prosecution, Applicants provide new claim 34 which recites the limitation that the foam have an average cell size of less than 100 micrometers prior to orientation, below those taught be the reference. The cell sizes given in Tusim et al. (in millimeters) correspond to a cell size range of 100 to 6000 micrometers. The only exemplified embodiments in the reference correspond to cell sizes of 1700 micrometers (Examples 1, 2);

1750 micrometers (Example 3); 3600 micrometers (Example 4); 5200 micrometers (Example 5); 3400 micrometers (Example 6); 4500 micrometers (Example 7); 3200 micrometers (Example 8).

With regard to claim 8, the Office Action asserts that a message may be printed on the reference insulating layer and supports the rejection with reference to column 4, lines 35-36 and 43-45. Applicants assert the described construction differs form that of the instant invention. In order for the message on the insulating layer 24 to be initially hidden and subsequently revealed by tampering, the thermally sensitive layer 26 must initially be opaque, and subsequently rendered transparent by application of heat. This embodiment is described on column 5, lines 15 to 46, which describes not a polymer film, but a microporous membrane as taught in U.S. 4,539,256. Applicants claim 8 depends from claim 6, which requires a thermoplastic film.

Claim 10 provides the limitation that the security element is revealed through a substantially transparent region in the foam layer. The Office Action asserts that Emslander et al (at column 5, lines 41-43) teach that the message may be printed in the facing layer 22 if the insulating layer is transparent.

Applicants suggest that this cited text refers to the embodiments where the insulating layer is a polymeric film (column 4, line 36) and not to transparent polymer foams. The reference provides no teaching or suggestion that the insulating layer 24 may be a transparent foam, nor one skilled in the art so conclude that transparent foams are contemplated by the reference. Applicants request clarification for the basis in asserting transparent foams.

Claims 13, and 15-18 recite that the security element comprise one or more "cores" embedded in the film or foam layer. Applicants have described the constructions from page 30, line 28 to page 31, line 26. Briefly, each "core" element is understood by those skilled in the art as a fine filament of a thermoplastic polymer. Some U.S. currency has a red polyester "core" or thread embedded in the paperstock, which is revealed by back illumination. The instant constructions are shown in Figs 3 and 4, and described in Examples 7 and 8.

Emslander et al. do not contemplate a thermoplastic core. In support of the rejection, the Examiner asserts that the "printed message with the leuco dye on the thermally sensitive layer reads on the claimed security element...". Applicants disagree. The leuco dye of Emslander is not a polymer filament, and is not embedded in a film or foam matrix. It is a printed indicia, which changes from colorless to colored on the application of heat. Instant claims 17 and 18

recite the limitation of an "inclusion-coextrusion process that is not contemplated by the reference. While they may be product by process limitation, the product (an embedded security cores) is not the same as, or obvious in view of, Emslander et al.

Claim 11 is directed to two security elements, which in registration provide a visual security element. In support of the rejection, the Office Action refers to Figures 5 and 6 of Emslander et al. Applicants disagree with the characterization of the reference Figures.

The embodiments of Figures 5 and 6 represent two separate constructions. In Figure 5 a warning message printed on the insulating layer 24 is rendered visible as the thermally sensitive layer melts and is rendered transparent. In Figure 6, a thermally sensitive leuco dye is printed on layer 26, and rendered colored by the application of heat. The reference does not describe the conversion of the embodiment of Figure 6 into that of Figure 5 as suggested by the Office Action. Each is a distinct embodiment, and there is not registration of the two to produce a visual security element as require by claim 11.

In contrast to the teachings of the reference, Applicants have provide a description of the registration of two elements on page 9, lines 16 to 26. One embodiment contemplated would be a security document, such as currency, having a first and second polarizing films (as security elements) having different polarizing axes. The first and second polarizing films are transparent, but by folding the currency so that they are in registration, the area becomes opaque.

Claim 31 recites that the security element is dispersed in the foam layer. The Office action asserts that Emslander et al teach that the message may be printed in the surface of the insulating layer, then concludes that [t]hus the printed message is also considered to be dispersed in the foam layer".

Applicants disagree and request the Examiner clarify the basis for this rejection. "Printed on" is not the same as "dispersed in". The reference provides no teaching or suggestion of incorporating a message within the matrix of the reference insulating layer.

The rejection of claims 1-3, 6-11, 13, 15-18, 20-25 and 27-33 under 35 USC § 103(a) as being unpatentable over U.S. 4,733,786 (Emslander et al.) in view of U.S. 6,251,319 (Tusim et al.) has been overcome and should be withdrawn.

Claims 12 and 14 stand rejected under 103 over Emslander et al. in view of Tusim et al., and further in view of U.S. 5,525,383 (Witkowski et al.). The rejections are traversed.

Claim 12, which depends from claim 11, recites that the instant foam article contains two security elements in registration, selected from a polarizing element or a Moiré pattern. Emslander does not teach or suggest two security elements in registration, as previously argued.

The defects are not corrected by Witkowksi, which is directed to a beverage container having a tubular sleeve mounted thereon. The sleeve, marked with a Moiré pattern, may be rotated with respect to the container producing transitory images.

The Office Action asserts it would have been obvious to use the Moiré patterns of Witkowski et al. to replace the printed message of Emslander motivated by the desire to attract the attention of consumers if the innerseal [of Emslander] has been tampered with.

Applicants disagree. The images of Witkowksi et al are the result of a movable sleeve that may be rotated with respect to the container. In order to accommodate the combination suggested in the Office Action, one of the elements of Emslander must be movable or rotatable with respect to the other elements of the innerseal. Such a combination would defeat the purpose of the Emslander innerseal, which first requires that the container be sealed by the innerseal, and where each of the innerseal elements are affixed to the adjacent elements. It is not apparent how one could provide a movable element, as required by Witkowksi, in the innerseal of Emslander.

Further, the security element of Emslander et al. is a heat-sensitive element, which changes color or transparency in response to heat. The article of Witkowksi et al. has a movable element that provides transitory images. The substitution suggested in the Office Action replaces an element that responds to heat with a non-analogous element that responds to relative motion. Further, the references are in non-analogous fields.

Such a combination is contrary to the rules of M.P.E.P. 2141.01(a) and 2145 part IX. "In order to rely on a reference as a basis for rejection of an Applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In re Oetiker, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). See also In re Deminski, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986); In re Clay, 966 F.2d 656, 659, 23 USPQ2d 1058, 1060-61 (Fed. Cir. 1992).

Claim 14 recites the limitation of plurality of cores embedded in the thermoplastic film layer. The Examiner is again requested to review Applicant's description of "cores" from page 30, line 28 to page 31, line 25. As previously argued, Applicant's cores are thermoplastic

filaments embedded in the foam layer, the film layer (for the instant claim, or at the interface between the film and foam layers.

The Moiré markings of Witkowksi et al., Figure 3, are printed on the surface of the movable sleeve as described in reference column 4, lines 7 to 43. The reference does not contemplate the instant cores embedded in a thermoplastic film layer. It is not apparent if provided with cores in the reference movable sleeve, whether the resulting article would produce the requisite transitory images. A printed line is not a core.

The rejection of claims 12 and 14 stand rejected under 103(a) over Emslander et al. in view of Tusim et al., and further in view of U.S. 5,525,383 (Witkowski et al.) has been overcome and should be withdrawn.

Claim 19 stands rejected under 35 USC § 103(a) as being unpatentable over U.S. 6,468,451 (Perez et al.) in view of U.S. 5,605,729 (Mody et al.). The rejection is traversed.

Claim 19 is directed to the construction of two foam layers and a thermoplastic film layer disposed therebetween. The Office Action admits that Perez et al. do not teach such a construction, but refer to Mody et al to remedy the defect.

Mody et al. is directed to a storage dispensing assembly for loop fastener material used in hook-and-loop fasteners. The Examiner refers to the construction of Figure 1 which purportedly shows the construction of two foam backing layers 16 and a loop layer 14 disposed therebetween.

Mody et al. do not correct the defects of Perez et al. Applicants again assert that the instant article is directed to a foam layer, where Perez uses a foam only for subsequent fibrillation. The Office Action apparently acknowledges the distinction in noting that the article of Perez et al is useful in hook and loop fastener applications – as result of the fibrous morphology. That Perez et al and Mody et al. both contemplate hook and loop fasteners is irrelevant to the instant claims.

The rejection of claim 19 under 35 USC § 103(a) as being unpatentable over U.S. 6,468,451 (Perez et al.) in view of U.S. 5,605,729 (Mody et al.) has been overcome and should be withdrawn.

Claim 26 stands rejected under 35 USC § 103(a) as being unpatentable over U.S. 4,733,786 (Emslander et al.) in view of U.S. 6,251,319 (Tusim et al.) as applied to claim 1, further in view of U.S. 3,916,063 (Dratz et al.). The rejection is traversed.

Claim 1 is patentable over Emslander et al. and Tusim et al. for the reasons previously argued. In the instant rejection, the Office Action acknowledges that Tusim et al. do not teach biaxial orientation. This defect is allegedly corrected by Dratz et al.

Dratz et al is directed to a polyolefin film having a printable, glueable overcoat thereonfor graphic arts and packaging applications. Dratz et al. teaches a film, not a foam as required by instant claim 26. Further, the reference teaches only conventional polypropylene, not high melt strength polypropylene, which is acknowledged by those skilled in the art as a distinct class of polypropylenes, having unique physical properties, notably high melt strength. The combination of Tusim and Emslander with Dratz does not put one in possession of a high melt strength, biaxially-oriented foam, nor a security substrate comprising a high melt strength, biaxially-oriented foam layer and a security element.

The Office Actions states in support that it would be obvious to use "the biaxially oriented polypropylene film as taught by Dratz et al. in the invention of Tusim et al because Dratz et al teach that the use of whether a monaxial or biaxial film would work equally well". Applicants disagree with the purported support for the combination.

Tusim et al. is directed to a foam, not a film, and uses high melt strength polypropylene instead of the conventional polypropylene of Dratz et al. Either suggested substitution would defeat the purpose of Tusim et al; to provide a foam suitable for automotive applications. One skilled in the art would appreciate that the films of Dratz et al, whether uniaxial or biaxial, would not be suitable materials for automotive seat cushions or automotive thermal and sound insulation applications.

The Office Action has provided no rationale why one would biaxially orient the foams of Tusim et al., as any specific teaching is absent. The only recitation of orientation must be inferred from the examples where the extruded foam is stretched over a mandrel to form a tubular foam article, which is subsequently slit to form a sheet. There is no suggestion of the benefits of orientation in the reference application, and one skilled in the art would recognize it as an artifact of forming a tubular foam article.

The rejection of claim 26 under 35 USC § 103(a) as being unpatentable over over U.S. 4,733,786 (Emslander et al.) in view of U.S. 6,251,319 (Tusim et al.) as applied to claim 1, further in view of U.S. 3,916,063 (Dratz et al.) has been overcome and should be withdrawn.

Double Patenting Rejections-

Claims 1-33 stand provisionally rejected judicially-created doctrine of obviousness-type double patent in view of claims 1-26 of Applicant's copending application 10/502,229. This rejection is respectfully traversed for the following reasons:

Enclosed is a "Terminal Disclaimer Under 37 C.F.R. Section 1.321(b)," which disclaims the portion of the term of any patent granted on the instant application that would extend beyond the expiration date of the term of 10/502,229. The Disclaimer also indicates that the instant application and U.S. 10/502,229 are commonly owned by 3M Innovative Properties Company by virtue of assignments recorded on 07/21/2004 at Reel 15880, Frame 0655/58, for the instant application and on 7/21/2004 at Reel 16381, Frame 0676/79, for U.S. 10/502,229. Both the instant application and U.S. 10/502,229 claim priority to Application No. 10/175,020, with an assignment recorded at Reel 13034, Frame 175/78 on 6/18/2002.The Disclaimer further indicates that the chain of title of the instant application has been examined in order to comply with 37 C.F.R. Section 3.73(b).

Since under 37 C.F.R. Section 1.78(d) a terminal disclaimer in compliance with 37 C.F.R. Section 1.321(b) can be used to overcome a non-statutory double patenting rejection, Applicants respectfully request that the double patenting rejections be withdrawn. In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested. Allowance of claims 1-34, as amended, at an early date is solicited.

Respectfully submitted,

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